UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,752	11/14/2001	Perry E. Davenport	BLD920010019US1	8261

			EXAMINER
23334	7590	08/09/2005	KANG, ROBERT N

FLEIT, KAIN, GIBBONS, GUTMAN, BONGINI
& BIANCO P.L.
ONE BOCA COMMERCE CENTER
551 NORTHWEST 77TH STREET, SUITE 111
BOCA RATON, FL 33487

ART UNIT	PAPER NUMBER
2622	

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/993,752	DAVENPORT ET AL.
	Examiner	Art Unit	
	Robert N. Kang	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
    closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-6</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-6</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

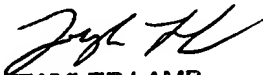8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>14 November 2001</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
         application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

TWYLER LAMB
PRIMARY EXAMINER

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____ .

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____ .

DETAILED ACTION

Drawings

1.   The drawings are objected to under 37 CFR 1.83(a) because they fail to show

the communicative coupling between elements of printer 106 in figure 2 as described in

the specification. Any structural detail that is essential for a proper understanding of the

disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected

drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office

action to avoid abandonment of the application. Any amended replacement drawing

sheet should include all of the figures appearing on the immediate prior version of the

sheet, even if only one figure is being amended. The figure or figure number of an

amended drawing should not be labeled as "amended." If a drawing figure is to be

canceled, the appropriate figure must be removed from the replacement sheet, and

where necessary, the remaining figures must be renumbered and appropriate changes

made to the brief description of the several views of the drawings for consistency.

Additional replacement sheets may be necessary to show the renumbering of the

remaining figures. Each drawing sheet submitted after the filing date of an application

must be labeled in the top margin as either "Replacement Sheet" or "New Sheet"

pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the

applicant will be notified and informed of any required corrective action in the next Office

action. The objection to the drawings will not be held in abeyance.

2.   In addition to Replacement Sheets containing the corrected drawing figure(s),

applicant is required to submit a marked-up copy of each Replacement Sheet including

annotations indicating the changes made to the previous version. The marked-up copy

must be clearly labeled as "Annotated Sheets" and must be presented in the

amendment or remarks section that explains the change(s) to the drawings. See 37

CFR 1.121(d)(1). Failure to timely submit the proposed drawing and marked-up copy

will result in the abandonment of the application.

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of
> making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the
> art to which it pertains, or with which it is most nearly connected, to make and use the same and shall
> set forth the best mode contemplated by the inventor of carrying out his invention.

4.   Claims 1 and 6 are rejected under 35 U.S.C. 112, first paragraph, as failing to

comply with the enablement requirement. The claim(s) contains subject matter which

was not described in the specification in such a way as to enable one skilled in the art to

which it pertains, or with which it is most nearly connected, to make and/or use the

invention. The limitations 1,3,4 and 6 of claims 1 and 6 refer to "receiving" signals from

either the print engine or the printer ASIC. The claim does not state what element

receives this transmission. Examiner assumes the bandwidth booster referred to in

claims 2, 3, 4, and 5 is the object receiving this signal, however the relationship must be

specifically stated in the claims.

Claims 1 and 6, limitations 3 and 5 are particularly confusing, since it is unclear

to the examiner what is doing the sending as well as the receiving. "receiving a ... line

of data to be printed from the printer ASIC," can potentially mean "receiving data from

the printer ASIC" or "receiving data to be printed by the printer ASIC." This claim

limitation requires clarification.

Additionally, the claim language "sending a shorter signal" referring to the pseudo

BD is non-enabling. The examiner is unclear how sending a shorter beam detect in

time duration (as shown in figure 4) results in a disproportionately longer time duration

for data transfer. Additionally, a pseudo beam detect pulse to the printer ASIC would

still have dead time associated from BD to BD wherein data transmission is prohibited.

For the purposes of this action, examiner assumes the system functions as claimed by

the applicant.

5.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

6.   The term "shorter" in claim 1 is a relative term which renders the claim indefinite.

The term "shorter" is not defined by the claim, the specification does not provide a

standard for ascertaining the requisite degree, and one of ordinary skill in the art would

not be reasonably apprised of the scope of the invention. A shorter signal with regards

to time duration is assumed; however, correction is required.

Claim Rejections - 35 USC § 102

7.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8.   Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by

Hanabusa (US-PAT 6824239).

With regards to claims 1 and 6, Hanabusa discloses a printer architecture, which

qualifies as a method and said method encoded on a computer readable medium, in

which the print engine 101, shown in figure 9 and described in column 9 lines 60-66,

contains sensors 103 "to detect printer status and to measure temperature and other

quantities that affect printing. A photo sensor (e.g., an automatic alignment sensor)

measures print density and dot locations for automatic alignment." Sensors 103

transmit their data to the control logic 94, through an I/O port 96. Hanabusa states in

column 10 lines 10-15 "although figure 9 shows individual components of printer 10 as

separate and distinct from one another, it is preferable that some of the components be

combined. For example, control logic 94 may be combined with I/O ports 96 in an ASIC

to simplify interconnections for the functions of the printer." Thus, to begin the printing

process, the print engine first sends the sensor data to the printer control section

through the I/O ports, satisfying the limitation 1, "receiving a first signal from a print

engine indicating initiation of transmission of print data."

Hanabusa states in column 11 lines 26-29, that the control logic 94, after

receiving the sensor data through I/O ports 96, "operates to receive commands from

host processor 2 for use in CPU 91, and to send printer status and other response

signals to host processor 2 and through host computer interface 113 and bi-directional

communication line 76." Broadly defined, a control command to send data is shorter

than the actual data sent, thus the printer ASIC comprised of the control logic 94

receives a "shorter signal" from the host processor 2 in response to the longer data

signal sent from the print engine sensors 103. Thus limitation 2 is met.

Hanabusa discloses in column 11 lines 29-36 that "print data and print buffer

memory addresses for print data received from host processor 2are sent to print buffer

109 in RAM 99.. and the addressed print data from print buffer 109 is transferred

through controller 115 to print engine 101 for printing by print heads 56a and 56b."

Thus, the third limitation is met, since a line of data is transmitted from the host 2

through interface 74 to the printer as shown in step 1705 of 17.

Because of the cyclic, line-by-line nature of the printing process, and the fact that

the sensors 103 send critical data such as "head temperature, media detection and

alignment data" which can change from line to line, it is understood that the sensors 103

transmit their data to the controller 94 every line of data. Additionally, further inspection

of flowchart 17 shows that after receiving a new line of data in S1705, the data is stored

in the buffer until the buffer is filled to capacity in S1713, then, and only then is data

transmitted to the print engine for printing. Therefore, limitations 5 and 6 are met as

well, since the second line of data is received before printing the first line.

With regards to claims 2 and 4, Hanabusa discloses a printer which qualifies as

both an apparatus and a printing system, comprising: CPU 91 and control logic 94

coupled through data path 76 to the printer interface 74 on the host machine connected

to the fixed disk 8 containing applications 82, thus meeting the requirement for "a

controller/processor unit communicatively coupled to the data embedding application

and to the network interface." Hanabusa also discloses ROM 92 and RAM 99

connected to the CPU 91 and control logic 94, respectively, thus satisfying the claim

requirement for "a data memory communicatively coupled to the controller/processor

unit." As stated earlier, the printer control logic 94 and I/O ports 96 are combined into a

printer ASIC as stated by Hanabusa and are connected to CPU 91 through bus 97, thus

"a printer ASIC" is "communicatively coupled to the controller/processor unit." Broadly

defined, the CPU and 91 and RAM 99 buffer the data in step 1712 of flowchart 17, thus

allowing the printer ASIC greater data handling capacity. Broadly defined, the CPU 91

controlling the RAM 99 qualifies as "a bandwidth booster", which is "communicatively

coupled to the printer ASIC and to the controller/processor unit." The print engine 101

is coupled through the I/O section 96, which is connected to the CPU 91. Thus the

"bandwidth booster" is coupled to the print engine. The print heads 56a and 56b are

included within the print engine 101 and thus "communicatively coupled" to the engine.

The "bandwidth booster" as defined above comprises both the CPU 91 and the

RAM 99, which is connected via bus 97 to the control logic 94, earlier defined as the

ASIC of the printer. Therefore, the bandwidth booster as defined possesses an "ASIC

interface," as stated in claims 3 and 4. Hanabusa's system uses I/O ports 96 to transfer

data between the bandwidth booster (91 and 99) and the ASIC (94 and 96), thus

satisfying the criteria for an "engine interface." Hanabusa states in column 10 lines 41

through 46 that "print buffer 109 has a first section for storing print data to be printed by one of the print heads 56a and 56b, and a second section for storing print data to be printed by the other one of the print heads 56a and 56b." Broadly, defined, this is a dual port buffer. Hanabusa's system buffers data into buffer 109 line by line, but a outputs a full buffer of line data to the print engine 101 simultaneously. The print engine then prints out each line sequentially. However, the memory addressing of the buffer is still first in, first out, since the line data is pushed into the bottom of the memory stack and addressed from the top of the memory stack. Thus, the buffering mechanism of Hanabusa qualifies as a "dual port FIFO." Finally, in figure 11 Hanabusa discloses an un-numbered clock module below the CPU interface (also un-numbered) connected to the internal bus 112. The clock module is also connected via bus 112 to printer 97 for communication with the printer CPU 91, as well as the DRAM controller 115. Therefore, the external clock is coupled with the ASIC, the FIFO, and the printer engine interface.

Conclusion

9.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ethington (US-PAT 5704022) discloses a printer with a high bandwidth compression architecture using several specialized ASICs and FIFOs. Takahashi (US-PAT 6856338) describes an image forming apparatus using a single laser and mirror for multiple BDs. Tsukada (UP-PAT 4899291) discloses an image processing system capable of buffering data and outputting to several devices.

Examiner's Note: The specification deals particularly with the pseudo BD and shortening ability of the bandwidth booster to increase the bandwidth of the ASIC, as such this material should be explicitly claimed in order to protect the invention. Examiner recommends specifying beam detect signals in claims 1 and 6, and including greater detail about the bandwidth increasing properties of the pseudo BD within claims 1-6.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert N. Kang whose telephone number is (571) 272-0593. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Coles can be reached on (571)272-7402. The fax phone number for the organization where this application or proceeding is assigned is 571-272-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TWYLER LAMB
PRIMARY EXAMINER